

Study and Analysis 100-car Naturalistic Driving Data

Amanda Justiniano (Dr. Eliza Y. Du), Department of Electrical and Computer Engineering, Purdue School of Engineering, Indianapolis, IN 46202

Every year, there are a large number of injuries and fatalities caused by vehicles crashes. In particular, pedestrian accidents are often fatal and have greatly impacted people's lives. Vehicle active safety system can sense and identify potential crash events and prevent or mitigate the collision either by warning the driver or by taking appropriate control actions such as autonomous braking. To design such these kinds of systems, we need to study how accidents happen and to avoid the accident in real-life scenarios. In this research, the Transportation Active Safety Institute (TASI) has recruited 110 drivers to collect naturalist driving data for pedestrian behavior analysis. In this project, my work is first to study how automatic pedestrian detection system works and verifies the detection results. I have worked analyzing picture frames from videos and by identifying pedestrians in these picture frames. Other components that are taken into consideration are the human factors, biomechanics, data acquisition and analysis, and consumer awareness. TASI uses facilities such as car simulators, Drive Safety DS-600c, directed towards the research of the driver's behaviors and for testing the active safety system. It is the main source for testing the system since it projects a scenario of road images that interacts with a cab of a car to provide an immersive driving experience. Upon completion of the research, there should be a successful safety system for implementing in cars that can effectively reduce vehicle crashes by alarming drivers of different dangers that might appear while driving.

Mentor: Dr. Eliza Y. Du

Research for this project was supported by Diversity Scholar Research Program and Toyota